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ABSTRACT

This investigation encompassed the implementation and evaluation of Rotating Peer Supervision in a college level science teaching methods course. Rotating Peer Supervision is defined as a process whereby students teach other students and themselves about teaching through observation, analysis and evaluation of their own teaching, as well as that of their colleagues. It employed an adaptation of the clinical supervision sequence with videotaping of teaching presentations. The subjects were 74 college juniors with an elementary education major enrolled in three randomly selected sections of a teaching methods course. Two experimental sections followed the syllabus for the course and used Rotating Peer Supervision along with their 15-minute teaching presentations in class. Students in the control section followed the syllabus but did not use Rotating Peer Supervision. Two instruments were administered at the outset and conclusion of the course to measure the personality traits in question. The results showed: (1) no significant difference on the inner-direction construct of the two groups, and (2) a positive difference on the internal control construct of the two groups (indicating that the students involved in peer supervision became more internally controlled). (LS)

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ROTATING PEER SUPERVISION: IMPLEMENTATION AND EVALUATION OF ITS EFFECT ON THE INNER-DIRECTION AND INTERNAL CONTROL CONSTRUCTS OF TEACHER TRAINEES

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Introduction

One of the purposes of education, frequently cited in recent literature, is to increase the self-sufficiency and autonomy of students. Broudy (1972) stated repeatedly that schools must be places where autonomy of the individual can be developed. The first of Bruner's five ideals in the planning and teaching of curriculum was, "to give our pupils respect and confidence in the powers of their own minds (Bruner, 1968, p.101)." Combs(1966) claimed that our only hope in meeting the demands of the future would be the production of intelligent, self-directed people. Finally, Jacobson (1968) stated that the central purpose of the schools in the 1980's will have to be to stimulate and help each child reach for his own potentialities.

An examination of teacher personality characteristics reported by some investigators (Heil, 1962) indicates that teacher personality traits frequently are the direct opposite of the kinds of traits educators hope to be developing in children. It seems difficult to envision children acquiring self-sufficiency and autonomy from teachers who exhibit extreme dependency on the judgment of others. If children do indeed model themselves after their teachers, and if the current goals in education are to be attained, then one of two courses of action appear feasible. Either efforts will have to be expended to preferentially select those individuals who have the personality traits congruent with current goals in education for admittance to teacher training institutions, or an attempt will have to be made to alter the personality traits of some teacher trainees.

1. This research was conducted as part of a doctoral dissertation at Boston College under the direction of Professor George T. Ladd. The author is now at the University of Hartford.

The investigator sought to examine the viability of a system in which some personality development could become an integral part of a teacher training program. The research was based on the premise that teacher trainees need to be made aware of themselves and their own unique potential before they can attempt to do the same with children (Jersild, 1955).

Objectives of the Inquiry

The purpose of this experimental investigation developed from the need to produce more inner-directed and more internally controlled teachers. Inner-direction refers to the degree to which a subject is controlled by internal goals and desires. The more inner-directed person tends to be more autonomous or self-supportive. He is guided primarily by internalized principles and motivations (Shostrom, 1966). Internal control refers to the degree to which an individual believes that his own behavior, skills or internal dispositions determine what reinforcements he receives (Rotter, 1966).

A model for peer supervision was designed and implemented to attempt to increase the degree of these traits among teacher trainees. The evaluation of the treatment involved the measurement of a possible change in the internal control construct and the inner-direction construct of those individuals involved in peer supervision.

Definition of Rotating Peer Supervision

The treatment involved an adaptation of the clinical supervision sequence (Goldhammer, 1969) and will hereafter be referred to as Rotating Peer Supervision. It is defined as a process whereby students teach other students and themselves about teaching, through observation, analysis and evaluation of their own teaching as well as that of their colleagues. The Rotating Peer Supervision Sequence was implemented as follows:

I. Pre-Observation:

The teacher trainee presented a copy of his written science lesson plan to each member of the supervisory team (five or more colleagues). The lesson

plan included a statement of the objectives, a brief summary of the content to be covered and a description of all planned activities for the lesson.

II. Observation:

The supervisory team observed the lesson which was being presented to between five and ten colleagues who were playing the role of children in a classroom of the grade level designated by the teacher trainee. Each member of the supervisory team made as complete and objective a record of the lesson as possible. The lesson was also video-taped.

III. Analysis and Strategy Session

The supervisory team held a strategy session, at which the teacher trainee was not present. One member of the team volunteered to be the leader. The students who were participating in the lesson also sat in on this session. Patterns of teaching, with evidence to support them, were presented. The pattern process of supervision focused on the identification of recurrent behaviors of the teacher in the act of teaching (Cogan, 1963). A few patterns were chosen for further discussion with the teacher trainee. Only those patterns were selected which seemed alterable, and those which through emphasis or omission would greatly improve the teacher's presentation, according to the judgment of the team. Objectives of the lesson plan were also examined to determine if they were met. It was understood that flexible teaching sometimes includes the modification and omission of objectives. Suggestions for improvement and alternative methods for presenting the lesson were formulated.

IV. Video-Taped Viewing:

The teacher trainee watched the tape of his lesson by himself. He outlined his patterns of teaching and collected evidence to establish whether or not he accomplished his objectives.

V. Supervisory Conference:

The leader of the analysis and strategy session continued to act in this capacity during the supervisory conference. To begin this conference, the teacher trainee was asked to present his own critique of his lesson. With this new information taken into account, the leader presented the findings of the supervisory team, always starting with positive comments. The teacher trainee was encouraged to interact freely with the team so that all comments were clarified to the satisfaction of the teacher trainee. The list of alternative methods was presented, as well as a summary of the comments which were generated during the analysis and strategy session. This conference was intended to provide positive reinforcement and constructive criticism.

The participatory roles in the sequence were rotated to give every student the opportunity to be supervised by his colleagues, to participate on a supervisory team and to be a team leader. The investigator was present

for all stages of the sequence, with the exception of the video-taped viewing. Each teacher trainee viewed his video-tape by himself.

The Mechanics and purposes of Rotating Peer Supervision were examined and discussed in class prior to initiating the program.

The purposes of the Rotating Peer Supervision Sequence as defined to the students were as follows:

1. Provide useful feedback to the individual teacher trainee.
2. Observe and analyze the presentation of a teaching lesson. This purpose focuses on what and how teachers teach.
3. Improve the methods and materials of instruction.
4. Develop in teachers a conviction and a value: that teaching, as an intellectual and social act, is subject to intellectual analysis (Mosher & Purpel, 1972).
5. Grow in understanding of one's own teaching repertoire (and how it may be modified) by observing and analyzing other repertoires in action (Anderson, 1972).
6. Stimulate self-evaluation.
7. Encourage a professional dialogue among students of teaching. A professional dialogue can be facilitated through constructive criticism, an openness toward others' ideas, a willingness to share ideas and opinions and a questioning attitude toward one's own actions in teaching.

Methodology and Design

The subjects (N=74) were college juniors with an elementary education major enrolled in three randomly selected sections of an elementary science teaching methods course. Two experimental sections followed the syllabus

for the course and used Rotating Peer Supervision along with their 15-minute teaching presentations in class. The one remaining section became the control section. Students in this section followed the syllabus for the course but did not use Rotating Peer Supervision with their 15-minute teaching presentations.

Two instruments were administered at the outset and conclusion of the course to measure the personality traits in question. The Inner-Direction scale of the Personal Orientation Inventory (Shostrom, 1963) was used to examine the degree to which the subjects were directed by internal goals and desires. The Internal versus External Control of Reinforcement Scale (Rotter, 1966) was administered to determine the degree to which the subjects believed that their own behavior, skills or internal dispositions determined what reinforcements they received.

Data and Its Sources

Table 1 summarizes the results for the sample on the two personality scales. The mean of 85.20 for the sample on the Personal Orientation Inventory (POI) pretest is two points below the mean for normal adults (87.2) reported by Shostrom (1966), while the mean of 87.11 on the posttest is less than one-tenth of a point below that mean. The subjects' responses on the POI suggested that they made choices and decisions based more on their own internal motivations than on external forces.

TABLE 1.

Descriptive Statistics for Personality Scales for Total Sample

	N	$\bar{X}$	S.D.	Mdn.	Skew*	Kurtosis**	Range
POI PRE	74	85.20	9.10	85.50	-.880	1.158	55-100
POI POST	74	87.11	9.684	87.30	-.318	-.070	61-106
I-E PRE	74	13.07	4.015	13.39	-.440	.047	1-21
I-E POST	74	13.15	4.550	14.50	-.536	-.216	2-21

*$g_1 = \pm .7224$
**$g_2 = \mp 1.4448$

The Internal vs External Control of Reinforcement Scale (I-E) pretest and posttest revealed a less average situation. The pretest mean of 13.0[illegible] and posttest mean of 13.15 were compared with all of the means reported by Rotter (1966) for college samples as well as for a national stratified sample and a Boston Area sample. Table 2 reports the significance of the differences between the means of each sample reported by Rotter and the means of this study. The t tests (Ferguson, 1971, p. 152) produced significant ($p<.001$) differences between each pair. Since t tests assume homogeneity of variance, the t tests were preceded by F tests of variance (Ferguson, 1971, p. 165) between each of the samples in Rotter's study and the pretest and posttest variances in this study. No significant ($p>.05$) differences in variances were found.

The direction of the difference in all cases indicated that the sample in this study had a more external locus of control with regard to what is believed to be responsible for reinforcement. The subjects in this sample perceived their reinforcement as more contingent upon luck, chance or more powerful individuals, than did any of the other college samples reported by Rotter.

TABLE 2

Significance of the Differences Between the Means of Samples Reported by Rotter (1966) and the Means of the I-E Pretest and Posttest in this Study

Sample	Testing Condit.	N	$\bar{X}$	S.D.	t_{pre}	p<*	t_{post}	p<*
Present Study Pretest	group	74	13.07	4.015				
Present Study Posttest	group	74	13.15	4.550				
Ohio State-Elem. Psych. Students	group	1180	8.29	3.97	10.06	<.001	10.125	<.001
Kansas State-Elem. Psych. Students	group	113	7.73	3.82	9.175	<.001	8.813	<.001
U. of Conn.-Elem. Psych. Students	group	303	9.22	3.88	7.6101	<.001	7.543	<.001
Fla. State Univ. - Negro Psych. Class	group	116	9.05	3.66	7.1150	<.001	6.8447	<.001
National Stratified Sample-Purdue Opinion Poll 10-12 gr.	various	1000	8.50	3.74	10.0949	<.001	10.175	<.001
18 yr. olds in Boston area	indiv.	57	9.56	4.10	4.9187	<.001	4.6744	<.001

*Probability of Significance for a two-tailed test

The first three null hypotheses were tested to determine if any change occurred in the inner-direction construct, as measured by the POI, of those individuals exposed to the treatment.

The following are the first three null hypotheses tested:

Ho_1 There is no difference between the two teaching method groups on the posttest scores, adjusted for the pretest scores, on the inner-direction scale of the POI.

Ho_2 There is no difference between the two aptitude groups on the posttest scores, adjusted for the pretest scores, on the inner-direction scale of the POI.

Ho_3 There is no difference in the mean score patterns for the teaching method groups across both aptitude levels on the inner-direction scale of the POI.

Table 3 reports the results of the two-way analysis of covariance performed to test these three hypotheses. It indicates that there was no significant interaction and no significant differences between the two method groups and between the two aptitude groups.

TABLE 3.

Analysis of Covariance for POI

Source	df	SS	MS	F*	p<
Aptitude	1	94.074	94.074	1.644	n.s.
Method	1	72.402	72.402	1.265	.265
Aptitude X Method	1	34.696	34.696	.606	.439
Error (within)	69	3948.235	57.221		

$F^*_{.05,1,69} \geq 3.98$

The next three null hypotheses were tested to determine if any change occurred in the internal control construct, as measured by the I-E, of those individuals exposed to the treatment.

The following are the three null hypotheses dealing with the internal control construct:

Ho_4 There is no difference between the two teaching method groups on the posttest scores, adjusted for the pretest scores, on the I-E Scale.

Ho_5 There is no difference between the two aptitude groups on the posttest scores, adjusted for the pretest scores, on the I-E scale.

Ho_6 There is no difference in the mean score patterns for method groups across both aptitude levels, on the posttest scores, adjusted for the pretest score, on the I-E scale.

Table 4 reports the results of the two-way analysis of covariance performed to test these three hypotheses. It indicates that there was no significant interaction among the teaching method groups and the aptitude groups. It also shows that there was no significant difference on the I-E posttest, adjusted for the pretest scores, between the two aptitude groups. The fifth and sixth null hypotheses were therefore accepted.

TABLE 4.

Analysis of Covariance for I-E

Source	df	SS	MS	F*	p <
Aptitude	1	27.717	27.717	1.930	n.s.
Method	1	58.141	58.141	4.048	.048
Aptitude X Method	1	.503	.503	.035	.852
Error (within)	69	990.997	14.362		

$F^*_{.05,1,69} \geq 3.98$

Since the teaching method factor was of primary interest it was entered as the second main effect. Exact probability statements can, therefore, be made about the fourth null hypothesis. The testing of this null hypothesis proved to indicate significant ($p. < .05$) differences between the teaching method groups. The fourth null hypothesis was therefore rejected. This result suggests that the treatment influenced the subjects with regard to their internal control construct. A reduction of the mean, for the experimental group reflects a trend toward internality, as desired by this study.

Rotter (1966) predicted that the construct of inner-direction is not necessarily related to an individual's perception of the locus of control for his reinforcement. This study supports his prediction. Table 5 shows that there were no significant relationships between the POI and the I-E. The two scales appear to be measuring two distinct personality constructs.

This information helps to explain why it was possible to obtain a significant difference between the teaching method groups on the I-E scale but not on the POI. If the scales measured two relatively distinct constructs, then it is feasible that the treatment could have influenced one construct and not the other.

TABLE 5.

Pearson Correlations Between Personality Scales Administered

	N	r	r^2	p <
POI PRE with I-E PRE	74	.0836	.0069	.479
POI PRE with I-E POST	74	-.0404	.0016	.732
POI POST with I-E PRE	74	.0837	.0070	.478
POI POST with I-E POST	74	-.1400	.0196	.234

Summary and Conclusions

It is possible that the Rotating Peer Supervision model, in attempting to make teaching an act subject to clinical and intellectual analysis, removed the possibility for the teacher trainees to perceive themselves as unique artists. Combs (1965), a strong advocate for the increased self-actualization of teachers, perceives teaching as an art. According to Combs, teachers are artists continually actualizing themselves through their teaching. The peer analysis of specific actions of the teacher trainees may have detracted from the subjects' perceptions of control over their own teaching. Peers who held the power to analyze a lesson may have been viewed as having authority over a teacher's actions. This may explain why there was no significant change in the inner-direction construct for this sample.

On the other hand, it can be hypothesized that relating all reinforcements to specific actions during the peer analysis created a change in the subjects' perceptions of their source of reinforcements. This may, therefore, account for the positive change in the sample's internal control construct.

Examination of teacher trainee personality characteristics reported in this study and in others indicated that teacher personality traits are frequently the direct opposite of the kinds of traits educators hope to be developing in children. This sample of teacher trainees remained significantly ($p < .001$) more externally controlled than any of the college age samples reported thus far. This finding highlights the need to facilitate psychological development toward increased internal control as part of teacher training programs.

Since the Rotating Peer Supervision model did not influence inner-direction, the following modifications are recommended for those wishing to adapt this model to another teacher training program:

Subjects should be trained in group dynamics so that the peer supervisory conference would become less directive. Prince (1972) suggested a series of ways meetings could become more creative through power sharing between the subordinates and those who are viewed as superiors. If the peer analysis and supervisory conference in this experiment resulted in making the teacher trainee feel that his peers had authority over his teaching, then prior training to achieve more cooperation and less defensiveness and competitiveness during group meetings would be advisable for future adaptations of this model.

It is further recommended that the effects of implementing Rotating Peer Supervision during student teaching be measured. It seems reasonable that the benefits accrued during its use in a real classroom setting could at least be equal to those exhibited during a methods course in college.

Further research is called for with teacher trainee samples from colleges with characteristics similar to the college used in this study and also with teacher trainee samples from different types of colleges in order to determine whether the externality of this sample is replicated among teacher trainee samples from all types of colleges and, therefore, perhaps related to being a teacher trainee. If the finding of this study is replicated only among teacher trainee samples from colleges similar to the type used in this study, then the finding may be related to matriculating as a teacher trainee in a particular type of college. Confirmation of the finding of this study would also suggest the need to investigate the differences between teacher trainees and students majoring in other areas sampled from various types of colleges.

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